

CAECIDOTEA FILICISPELUNCAE, A NEW
TROGLOBITIC ASELLID ISOPOD FROM OHIO

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Abstract.—*Caecidotaea filicispeluncae* is described from Fern Cave, Adams Co., Ohio. The endopod of the male pleopod 2 lacks terminal processes except the cannula. Affinities with other *Caecidotaea* species are obscure.

Records of troglobitic asellids from Ohio are rare. Fleming (1972:252) listed *Asellus alabamensis* from Cedar Fork Cave, Adams Co. This is very probably a misidentification; as pointed out by Lewis and Bowman (1981:55), the identity of *A. alabamensis* Stafford (1911) is uncertain and its resolution awaits the collection of topotypes. A second record is that of *Caecidotaea stygia* Packard from three intermittent streams near Cincinnati, Hamilton Co. (Bowman and Beckett 1978). We report herein the occurrence of a new troglobitic species of *Caecidotaea* from Adams Co., southern Ohio.

Caecidotaea filicispeluncae, new species

Figs. 1-2

Material.—Ohio, Adams Co., Fern Cave (38°42'23"N, 83°22'06"W). 12 Jun 1980, leg. M. Flynn and H. H. Hobbs, III: 7.5 mm holotype male (USNM 195368); 4 paratypes (USNM 195369), 4.7 mm male, ? mm male (pleon and telson missing), 7.1 mm female (small oostegites), 4.5 mm female (small oostegites). 11 Sep 1982, leg. H. H. Hobbs, III: 3 paratypes (USNM 195370), 6.2 mm female (no oostegites), 5.3 mm female (small oostegites), 4.4 mm female (small oostegites).

Etymology.—From the Latin “filix, -icis” (fern) plus “spelunca” (cave), referring to the type-locality, Fern Cave.

Diagnosis.—Blind, unpigmented. Body narrow, elongate, sides subparallel. Antenna 1 esthete formula 4-0-1. Pereopod 1 proximal palmar process a robust articulated spine; mesial and distal processes unicuspate, narrowly separated, distal process smaller. Pereopod 4 sexually dimorphic. Male pleopod 1 larger than pleopod 2, with short apical setae; lateral margin concave with short distal setae and long proximal setae. Male pleopod 2 endopod tip with subapical cannula, but no other processes. Pleopod 3 exopod apex truncate. Pleopod 4 exopod with single false suture (pattern B of Lewis and Bowman 1981).

Description.—Length of largest specimen, male holotype, 7.5 mm. Sides of body nearly straight; pereonites successively wider, greatest body width 1.7 mm at pereonite 7. Head slightly more than 1/3 wider than long; anterior margin shallowly concave; postmandibular lobes moderately developed. Pereonite 1 subequal in length to pereonites 6 and 7, about 1/3 longer than the subequal pereonites 2-5; coxa visible dorsally on pereonites 5-7. Telson 1/3 longer than wide in female, 1/2 longer in male; sides subparallel; posterior margin broadly angular in male, with low but distinct caudomedial lobe in female.

Antenna 1 reaching slightly beyond proximal margin of 4th segment of antenna

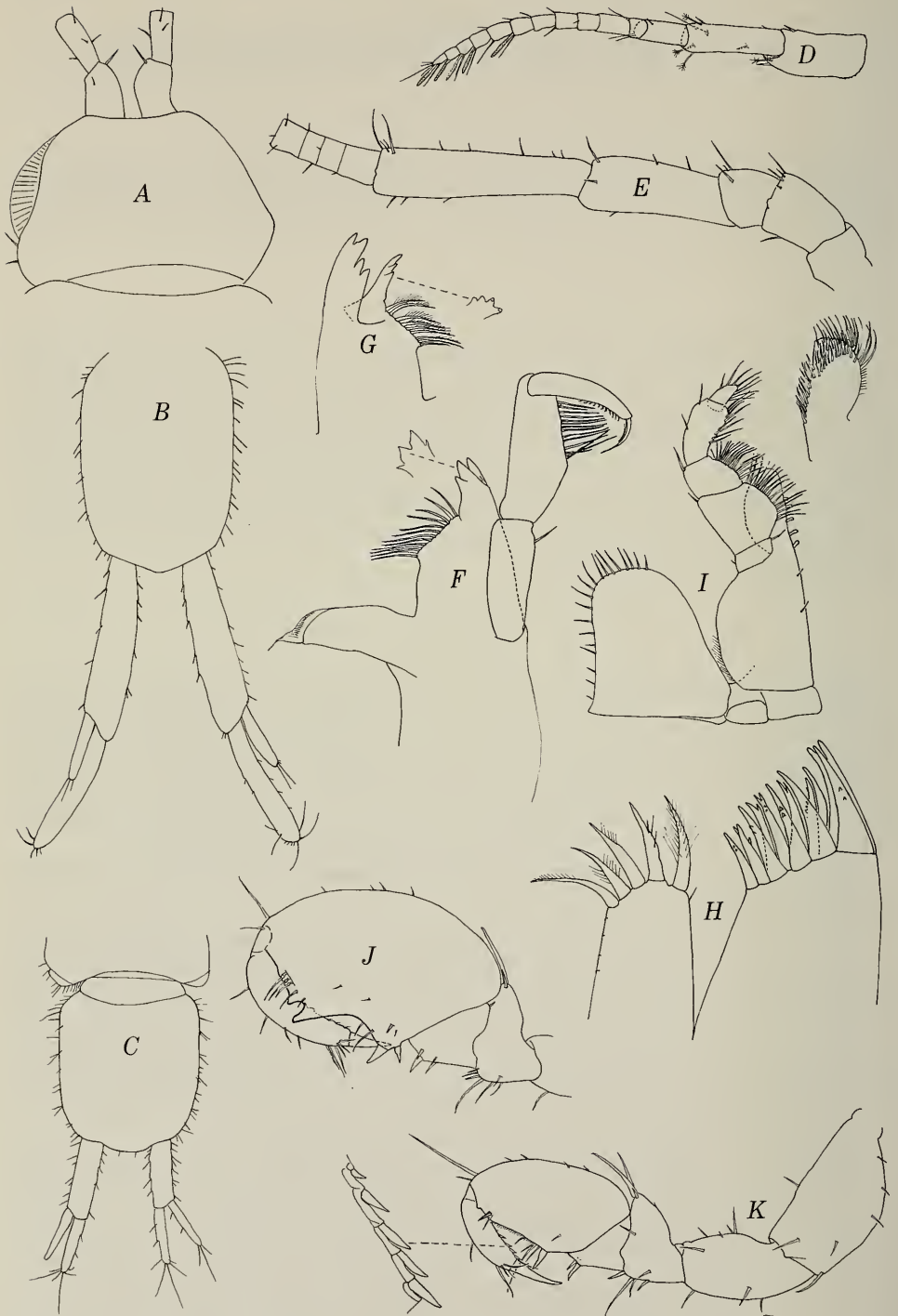


Fig. 1. *Caecidotea filicispeluncae*: A, 4.7 mm male; B, D–J, 7.5 mm male holotype; C, 6.2 mm female; K, 7.1 mm female. A, Head, dorsal; B, C, Telson and uropods, dorsal; D, Antenna 1; E, Antenna 2; F, G, Right and left mandibles; H, Maxilla 1; I, Maxilliped, with posterior view of endite; J, K, Pereopod 1.

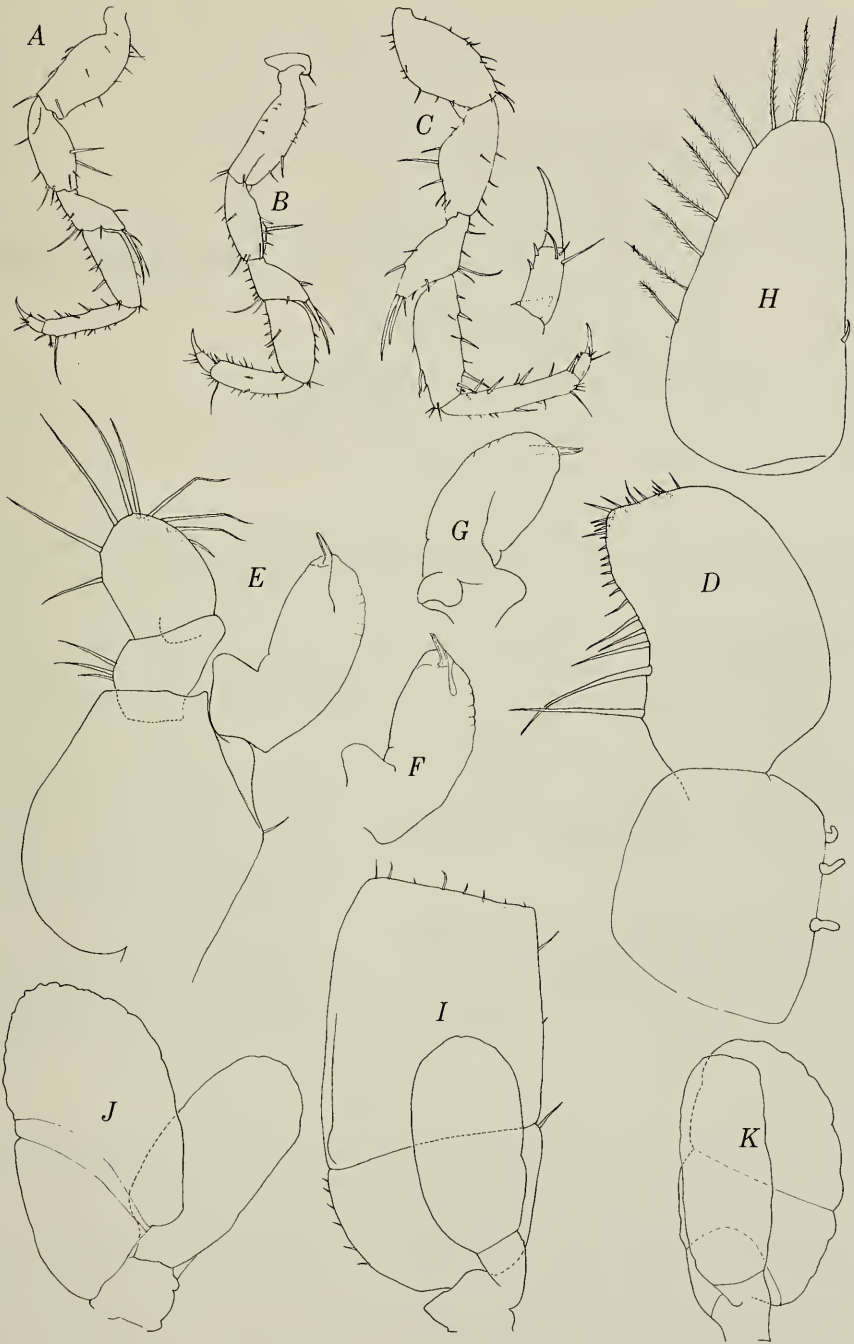


Fig. 2. *Caecidotea filicispeluncae*: A, H, 6.2 mm female; B-G, I-K, 7.5 mm male holotype. A, B, Pereopod 4; C, Pereopod 6; D, Pleopod 1; E, Pleopod 2, anterior; F, G, Endopod of pleopod 2, oblique and posterior views; H, Pleopod 2; I, Pleopod 3; J, Pleopod 4; K, Pleopod 5.

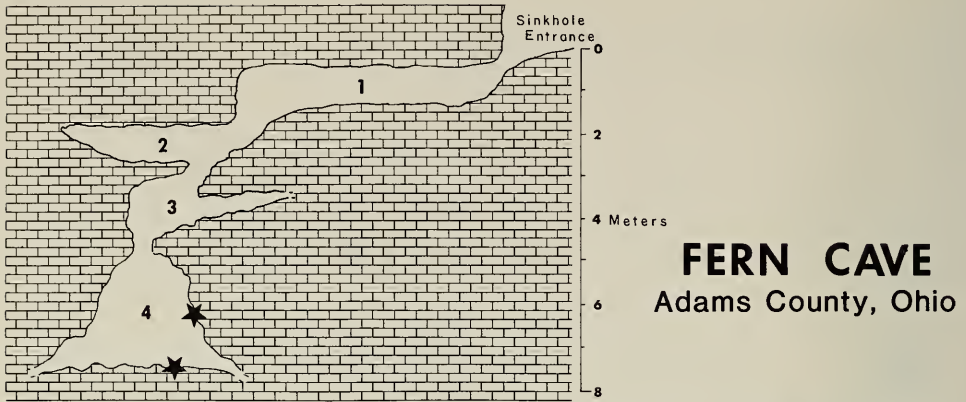


Fig. 3. Fern Cave, vertical profile, showing the 4 levels and the sites (stars) where *Caecidotea filicispeluncae* was collected.

2 peduncle; flagellum with up to 10 segments, esthete formula 4-0-1. Antenna $0.8\times$ as long as body (6 mm in holotype); flagellum with up to 41 segments (in holotype).

Mandibles with 4-cusped incisors and lacinia; spine-row with 9 and 12 spines in left and right mandibles. Maxilla 1 with 5 and 13 apical spines on inner and outer lobes, as in other species of *Caecidotea*. Maxilliped with 5 retinacula on right and left members, endite densely setose.

Male pereopod 1 propus about 0.6 as wide as long; palm defined by robust articulated spine representing proximal process; mesial process oblique, triangular, its pointed apex slightly distal to midlength of palm; separated by narrow U-shaped cleft from shorter distal process. Female pereopod 1 propus smaller, mesial and distal processes absent, palm armed with dense fringe of setules; dactyl with row of oblique teeth on flexor margin.

Pereopod 4 sexually dimorphic, modified in male for clasping female during amplexus. Femur narrow and with smaller muscles, presumably since function of limb in ambulation is reduced. Carpus and propus shorter and wider to accommodate larger muscles used in clasping female; spines on flexor margins reduced for more efficient clasping.

Male pleopod 1 protopod with 3 retinacula; endopod about $\frac{2}{3}$ as wide as long, medial margin convex, apical margin slightly convex, armed with short naked setae, lateral margin concave for half its length in central part, armed with naked setae, setae on distal part short, those on proximal part long.

Male pleopod 2, protopod with 1 medial seta, exopod proximal segment with 3 lateral setae, distal segment oval, $\frac{1}{4}$ longer than wide, with 9 marginal setae; endopod with rounded lateral basal apophysis, tip with moderately long, narrow cannula arising subapically medial to fissure, distal third of medial margin with raised striae. Female pleopod 2 with about 10 plumose marginal setae and a curved spine at proximal third of medial margin. Pleopod 3 with about 8 setae on truncate distal margin. Pleopod 4 exopod pattern B, without proximal spines.

Uropods of male holotype nearly $\frac{1}{3}$ longer than telson; peduncle nearly $\frac{1}{4}$ longer than exopod; rami linear, exopod about twice as long as endopod, latter narrower than exopod.

Relationships.—The combination of three characters sets *C. filicispleuncae* apart from all known species of *Caecidotea*. (1) Male pleopod 1 with short apical setae and concave lateral margin with long setae proximally. At least nine species share this character. (2) Male pleopod 2 endopod tip with cannula, but no other processes. None of the above nine species share this character. (3) Pleopod 4 with single false suture. Three of the nine species agree; pleopod 4 is undescribed for four of the nine species.

Further discussion of relationships at this time would be fruitless, since so many species of *Caecidotea* are inadequately known.

Habitat

Fern Cave is located in SE Adams Co. (38°42'23"N, 83°22'06"W). The cave is small (total horizontal length 18 m), yet it consists of four levels, making it vertically one of the most complex caves in Ohio. The passages are developed in dolomite (Pebbles Formation of the Niagaran Series).

The entrance to Fern Cave opens from the bottom of a prominent sinkhole east of Blue Creek Road between Southdown Fork and Copperas Rock Hollow, at an elevation of 230 m. The cave name is derived from the dense growth of Christmas ferns (*Polystichum acrostichoides*) within the sinkhole. There is no stream in the cave, but it is a "wet" cave because of the considerable drip input and the presence of small rimstone pools. The location of the entrance at the bottom of a sinkhole suggests that the cave receives water draining into the sink. There is no significant development of speleothems in Fern Cave.

Caecidotea filicispleuncae occurs in the lowest (fourth level) of Fern Cave. Water trickles down the southeastern wall of the terminal room, resulting in a flowstone coating and several small mini-rimstone pools. *Caecidotea filicispleuncae* occurs in these pools and also on the floor of the room among gravel and allochthonous debris (see stars in Fig. 3).

Some physicochemical data were taken from cave water on 16 April 1963. The water had been diluted by heavy runoff from recent rains, but the following results were obtained: Temperature 10.5°C; O₂ 10.9 mg/l; Specific conductance 142 μmhos/cm; pH 7.4; Iron 0.78 mg/l; PO₄-P 0.17 mg/l; NO₃-N 2.4 mg/l; Methyl orange alkalinity 2.4 meq; Total hardness 110 mg/l CaCO₃.

Literature Cited

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